

CLAIMS

What is claimed is:

1. An RF amplifier, comprising:
an amplifier circuit having one or more amplifier stages; and
a power distribution network having one or more power distribution branches for distributing one or more power supply voltages to said one or more amplifier stages, wherein one or more of said one or more power distribution branches comprises a π C-R-C network coupled to an inductive load.
2. The RF amplifier of Claim 1 wherein the amplifier circuit includes an input configured to receive a phase modulated RF signal.
3. The RF amplifier of Claim 2 wherein the phase modulated RF signal has a constant magnitude.
4. The RF amplifier of Claim 1 wherein one or more of said one or more power supply voltages has a variable magnitude.
5. The RF amplifier of Claim 2 wherein one or more of said one or more power supply voltages has a variable magnitude.

6. The RF amplifier of Claim 1, further comprising a biasing network having one or more bias circuits, each of said bias circuits having a power input and a bias signal output for providing a bias signal to a corresponding one of said one or more amplifier stages.

7. The RF amplifier of Claim 6 wherein one or more of said bias circuits is coupled to an RC filter, said RC filter comprising:

a resistor having a first end coupled to an RF input of one of said one or more amplifier stages and a second end; and

a capacitor having a first end coupled to the second end of said resistor and a second end coupled to ground.

8. An RF power amplifier, comprising:

an input amplifier stage having an input configured to receive a phase modulated RF signal;

at least one intermediate amplifier stage having an input configured to receive an amplified RF signal from said input amplifier, or an amplified RF signal derived there from;

a final amplifier stage having an input configured to receive a further amplified signal from an output of one of said at least one intermediate amplifier stage; and

a power distribution network comprising a pre-final amplifier stage power distribution network and a final amplifier stage power distribution network, wherein said pre-final amplifier stage power distribution network includes a pre-final amplifier stage power distribution branch for each input amplifier stage and each intermediate amplifier stage, each pre-final amplifier stage power distribution branch comprising:

a resistor having a first end configured to be coupled to a pre-final amplifier stage power supply and a second end,

an inductor having a first end coupled to either said input amplifier stage or an intermediate amplifier stage and a second end coupled to the second end of said resistor,

a first capacitor having a first end configured to be coupled to the pre-final amplifier stage power supply and a second end coupled to ground, and

a second capacitor having a first end coupled to the second end of said resistor and a second end coupled to ground.

9. The RF power amplifier of Claim 8 wherein the final amplifier stage power distribution network comprises:

an inductor having a first end coupled to said final amplifier stage and a second end configured to be coupled to a final amplifier stage power supply; and

a capacitor having a first end coupled to the second end of said inductor and a second end coupled to ground.

10. The RF power amplifier of Claim 9 wherein the input amplifier stage is configured to receive a phase modulated RF signal.

11. The RF power amplifier of Claim 10 wherein the phase modulated RF signal has a constant magnitude.

12. The RF amplifier of Claim 9 wherein said final amplifier stage power supply provides a variable magnitude supply voltage.

13. The RF amplifier of Claim 8, further comprising a biasing network having active bias circuits associated with each of said input, at least one intermediate, and final amplifier stages, each bias circuit having an input configured to be coupled to a bias supply, an output for providing a bias signal to the associated amplifier stage.

14. The RF amplifier of Claim 13 wherein each of said active bias circuits of said biasing network has an associated RC filter, said associated RC filter comprising:

a resistor coupled between said output of the associated active bias circuit and the input of the associated amplifier stage; and

a capacitor coupled between the output of the associated active bias circuit and ground.

15. A method of distributing power to an RF power amplifier, comprising:
receiving a first power supply voltage at a first power supply node of said RF power amplifier;

distributing said first power supply voltage to a first stage of a power amplifier circuit of said RF power amplifier;

receiving a second power supply voltage at a second power supply node of said RF power amplifier; and

distributing said second power supply voltage to a second stage of said power amplifier circuit,
wherein distributing said first power supply voltage includes passing said first supply voltage through a π C-R-C network.

16. The method of Claim 15, further comprising preventing RF signals from propagating between active bias circuits that provide bias signals to said first and second amplifier stages.

17. An RF power amplifier, comprising:
means for distributing a first power supply voltage to a first stage of a power amplifier circuit of said RF power amplifier; and
means for distributing a second power supply voltage to a second stage of said power amplifier circuit,
wherein said means for distributing said first power supply voltage includes means for passing said first supply voltage through a π C-R-C network.

18. The RF power amplifier of Claim 17, further comprising means for preventing RF signals from propagating between active bias circuits that provide bias signals to said first and second amplifier stages.

19. An RF power amplifier, comprising:
an input amplifier stage having an input configured to receive an RF input signal;

an output amplifier stage operable to provide an amplified RF output signal;

one or more intermediate amplifier stages coupled between said input and output amplifier stages; and

a power distribution network configured to receive a power supply voltage and distribute it through a first power distribution branch to a power input of said input amplifier stage, said first power distribution branch comprising:

- a resistor having a first end configured to receive said power supply voltage,
- an inductor having a first end coupled to said input amplifier stage and a second end coupled to a second end of said resistor,
- a first capacitor having a first end configured to receive said power supply voltage and a second end coupled to ground, and
- a second capacitor having a first end coupled to the second end of said resistor and a second end coupled to ground.

20. The RF power amplifier of Claim 19 wherein the power distribution network further includes a second power distribution branch comprising:

- an inductor having a first end coupled to a power input of said output amplifier stage and a second end configured to receive a second power supply voltage; and
- a capacitor having a first end coupled to the second end of said inductor and a second end coupled to ground.

21. The RF power amplifier of Claim 19, further comprising a biasing network operable to provide bias voltages to inputs of the input, one or more intermediate, and output amplifier stages, said biasing network comprising:

an input amplifier stage active bias circuit having an input for receiving a bias supply voltage and an output for providing an input stage bias voltage to the input of said input amplifier stage;

one or more intermediate amplifier stages having inputs for receiving the bias supply voltage and outputs for providing intermediate amplifier stage bias voltages to corresponding inputs of said one or more intermediate amplifier stages; and

an output amplifier stage active bias circuit having an input for receiving a bias supply voltage and an output for providing an output stage bias voltage to the input of said output amplifier stage.

22. The RF power amplifier of Claim 21 wherein each of the active bias circuits have associated RC filters, each RC filter comprising:

a resistor having a first end coupled to the output of the associated active circuit and a second end coupled to the input of the associated amplifier stage; and

a capacitor having a first end coupled to the first end of the resistor and a second end coupled to ground.

23. A power distribution network for an RF power amplifier, comprising:

a first power distribution branch for distributing a first power supply voltage to an input stage of a multistage amplifier circuit of an RF power amplifier; and

a second power distribution branch for distributing a second power supply voltage to an output stage of said amplifier circuit,

wherein said first power distribution branch comprises:

a resistor having a first end configured to receive said first power supply voltage,

an inductor having a first end coupled to said first amplifier stage and a second end coupled to a second end of said resistor;

a first capacitor having a first end configured to receive said first power supply voltage and a second end coupled to ground, and

a second capacitor having a first end coupled to the second end of said resistor and a second end coupled to ground.

24. The power distribution network of Claim 23, further comprising an intermediate stage power distribution branch for distributing the first power supply voltage to an intermediate amplifier stage of said amplifier circuit, said intermediate amplifier stage coupled between the input and output stages of said multistage amplifier circuit.

25. The power distribution network of Claim 23, further comprising an intermediate stage power distribution branch for distributing a third power supply voltage to an intermediate amplifier stage of said amplifier circuit, said intermediate amplifier stage coupled between the input and output stages of said multistage amplifier circuit.

26. A power distribution network for an RF power amplifier, comprising:
- a first power distribution branch for distributing a power supply voltage to an input stage of a multistage amplifier circuit of an RF power amplifier; and
 - a second power distribution branch for distributing said power supply voltage to an output stage of said amplifier circuit,
- wherein said first power distribution branch comprises:
- a resistor having a first end configured to receive said power supply voltage,
 - an inductor having a first end coupled to said first amplifier stage and a second end coupled to a second end of said resistor,
 - a first capacitor having a first end configured to receive said power supply voltage and a second end coupled to ground, and
 - a second capacitor having a first end coupled to the second end of said resistor and a second end coupled to ground.
27. The power distribution network of Claim 26, further comprising an intermediate stage power distribution branch for distributing the first power supply voltage to an intermediate amplifier stage of said amplifier circuit, said intermediate amplifier stage coupled between the input and output stages of said multistage amplifier circuit.